

AMENDMENTS TO THE CLAIMS:

The listing of claims below will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A synchronization method for data demodulation in an OFDM radio receiver, comprising the steps of:

sampling and measuring an OFDM radio transmission to obtain a series of received-signal samples that represent a short preamble, a long preamble, a long preamble guard interval (GI), and a first long preamble, respectively;

computing an inner product of vectors comprised of samples $x(n)$, $x(n-1), \dots, x(n-1-N)$ and $x(n)$, $x(n+1), \dots, x(n+N-1)$ of said received-signal samples and computing the magnitude squared of a coherent and non-coherent combination determined by:

~~to exploit the periodicity of the long preamble, coherent (and non-coherent) combining is performed as follows:~~

$$y(n) = \left\| \sum_{k=0}^{N-1} \{x(n-k) + x(n-k+64)\} \{x(n+k) + x(n+k+64)\} + \sum_{k=0}^{N-1} x(n+32-k)x(n+32+k) \right\|^2$$

assuming an index of the maximum of the result of the combination is the index of the start of the first long preamble;

subtracting a corresponding number of samples from the result of the combination to find a first received-signal sample of said long preamble guard interval (GI); and

identifying said first received-signal sample of said long preamble GI to synchronize any data demodulation of subsequent parts of said OFDM radio transmission,

wherein n is an integer identifying the n 'th sample, $x(n)$, of the vectors, N is an integer having a value determining the number of samples in the vectors, and k is an integer having a value varying from 0 to $N-1$.

2. (Canceled).

3. (Currently Amended) A synchronization method for data demodulation in an OFDM radio receiver, comprising the steps of:

sampling and measuring an OFDM radio transmission to obtain a series of received-signal samples that represent a short preamble, a long preamble guard interval (GI), and a first long preamble, respectively;

mathematically manipulating the series of received-signal samples around $x(n+32)$ ~~is performed~~ so as to achieve a coherent copy of the samples around $x(n)$ and $x(n+64)$ as follows:

$$\bar{z}_B(k) = [-x(n+32) \text{flipud}(\text{conj}(x(n+32-1:-1:n+32-N))))]$$

$$\bar{z}_F(n) = [-x(n+32) \text{flipud}(\text{conj}(x(n+32+1:1:n+32-N))))]$$

$$y(n) = \left\| \sum_{k=0}^{N-1} \{x(n-k) + x(n-k+64) + \bar{z}_B(k)\} \{x(n+k) + x(n+k+64) + \bar{z}_F(n)\} \right\|^2$$

assuming an index of the maximum of the result of the manipulating step is the index of the start of the first long preamble;

subtracting a corresponding number of samples from the result of the manipulating step to find a first received-signal sample of said long preamble guard interval (GI); and

identifying said first received-signal sample of said long preamble GI to synchronize any data demodulation of subsequent parts of said OFDM radio transmission,

wherein n is an integer identifying the n 'th sample, $x(n)$, of the vectors, N is an integer having a value determining the number of samples in the vectors, and k is an integer having a value varying from 0 to $N-1$.

4. (Currently Amended) A synchronization method for data demodulation in an OFDM receiver, comprising the steps of:

sampling and measuring OFDM radio transmission to obtain a series of received-signal samples that represent a short preamble, a long preamble guard interval (GI), and a first long preamble, respectively;

adding and collecting the vector inner products (complex) result of the previous and subsequent samples starting at $x(n)$ and $x(n+32)$ and adding and collecting are added ~~and then collect the samples at $x(n+64+32)$ as follows:~~

$$y(n) = \left\| \sum_{k=0}^{N-1} x(n-k)x(n+k) + \sum_{k=0}^{N-1} x(n+32-k)x(n+32+k) \right\|^2$$

assuming an index of the maximum of the result of the adding and collecting step is the index of the start of the first long preamble;

subtracting a corresponding number of samples from the result of the adding and collecting step to find a first received-signal sample of said long preamble guard interval (GI); and

identifying said first received-signal sample of said long preamble GI to synchronize any data demodulation of subsequent parts of said OFDM radio transmission,

wherein n is an integer identifying the n 'th sample, $x(n)$, of the vectors, N is an integer having a value determining the number of samples in the vectors, and k is an integer having a value varying from 0 to $N-1$.

5. (Canceled).

AMENDMENTS TO THE DRAWINGS

The attached replacement drawing sheet includes amendments to Figure 3 of the original drawing sheet. The replacement sheet replaces the original drawings sheet. As directed by the Examiner, reference numerals 302-310 have been added to the drawing. No new matter is entered by the drawing changes, and the specification as filed is consistent with and fully supports the changes made.

Attachment: Replacement Sheet